REMARKS

Claim Status

Claims 1-9 and 11-21 remain pending in the present application. Claim 1 has been amended herein. The claim amendment directs the scope of claim 1 to alternative aspects. In some case, e.g., adding the terms "at least some of," the scope has been broadened.

Rejections

Claims 1-3, 11-14, 16, 20 and 21 stand rejected as being anticipated by the Background section of the subject application. Claims 4-9 and 15 stand rejected as being unpatentable over the Background. Claims 17 and 19 stand rejected as being anticipated by U.S. Patent No. 5,652,626 (Kawakami). Claim 18 stands rejected as being unpatentable over Kawakami in view of the Background.

Applicants respectfully traverse these rejections.

Response to the Rejections

Background of the Invention

Applicants respectfully submit that the Background section of the subject application does not teach or suggest the combinations recited in the claims.

Claim 2

Claim 2 provides an excellent example of such. Claim 2 recites among other features a filter for calculating a value of each pixel along a preferred projection axis. The preferred projection axis corresponds to a direction of embedding determined based on color characteristics of at least some pixels associated with each pixel.

This preferred projection is typically not projected onto a luminance axis (see, e.g., page 2, line 12-14). Instead, the projection axis corresponds to a direction of embedding determined based on color characteristics of at least some pixels associated with each pixel.

In contrast, the Background section at page 1, lines 24-25, discusses projecting color changes onto a luminance axis (see also FIG. 2, and related discussion on page 3, lines 17-28). The cited section at page 2, lines 1-7 discusses, e.g., calculating a value for a given pixel, perhaps by evaluating pixel values on a set of "cross axes".

We respectfully request that claim 2 be allowed.

Claim 12

Claim 12 recites, in combination with other features, means for filtering a color image to project color components of each pixel to a preferred projection axis. Projecting color components is based at least in part on local color content of the color image for an image area that is associated with each pixel.

This preferred projection axis is typically not projected onto a luminance axis (see, e.g., page 2, line 12-14). Instead, the projection axis corresponds to a direction of embedding determined based on color characteristics of at least some pixels associated with each pixel.

In contrast, the Background section at page 1, lines 24-25, discusses projecting color changes onto a luminance axis (see also FIG. 2, and related discussion on page 3, lines 17-28). The Background section at page 2, lines 1-7 discusses, e.g., calculating a value for a given pixel, perhaps by looking at pixel values on a set of cross axes.

Claim 12 should be allowed.

Claim 13

Claim 13 recites, in combination with other features, filtering a color image to generate filtered data by projecting color values of each pixel onto a selected axis that is determined by examining color of surrounding pixels.

In claim 13 the selected projection axis is determined by examining color of surrounding pixels.

The background, in contrast, would project onto a luminance axis (see, e.g., page 1, lines 24-25).

Claim 3

Claim 3 recites that color values of each pixel are projected onto a preferred projection axis. The preferred projection axis is determined by examining color of pixels surrounding each pixel.

The Background teaches projecting onto a luminance axis (page 1, lines 24-25). The cited section at page 2, lines 1-7 discusses, e.g., calculating a value for a given pixel, perhaps by looking at pixel values on a set of cross axes.

We respectfully request that claim 3 be allowed.

Claim 1

Claim 1 now recites, in combination with other features, projecting color values of each pixel onto a preferred projection axis that is adaptively determined by examining color of at least some of the pixels surrounding each pixel. This fosters watermark reading that is aligned with watermark insertion.

The background suggests, rather, to project onto a luminance axis (page 1, lines 24-25) and calculating pixels values by looking at pixel values on a set of cross axes (page 2, lines 3-7).

We respectfully request that claim 1 be allowed.

Claim 20

Claim 20 recites approximating a plurality of color directions that a digital watermark is likely embedded along through analysis of a plurality of local color characteristics of the image, and searching for the digital watermark in the approximated color directions.

The cited background sections are not understood to teach or suggest at least searching for a digital watermark in a plurality of color directions.

Claim 21

Claim 21 recites a combination including a method of embedding a digital watermark in an image. The image comprises at least a set of pixels having color values associated therewith. The method includes: for each pixel in the set of pixels,

determining a color direction associated therewith through reference to at least color characteristics of a plurality of associated pixels, and embedding components of the digital watermark along color directions determined in the determining step.

The relied upon passages of the Background section primarily deal with watermark reading (i.e., page 1, line 23-23 and page 2, lines 1-2). Moreover, these background sections are not understood to discuss determining a color direction associated therewith through reference to at least color characteristics of a plurality of associated pixels, in combination with the other features of the claims.

We respectfully request that claim 21 be allowed.

Remaining claims

The remaining claims also recite combinations not understood to be disclosed in the Background of the subject application.

Claims 1-3, 10-14 16 and 20 are believed to be in condition for allowance. Favorable consideration is requested.

Kawakami

The cited passages of Kawakami are not understood to teach or suggest the combinations recited in claims 17 and 19.

Claim 17

Claim 17 recites inserting a first watermark in an image in a first color direction, wherein the first color direction is determined, at least in part, through consideration of localized color characteristics associated with different sets of pixels in the image; and inserting a second watermark in a color direction that is orthogonal to the first color direction, in combination with the other claim features.

The Kawakami reference is not understood to determine a color direction through at least consideration of localized color characteristics associated with different set of pixels in an image. The cited equations (37-39) and passages (Cols. 17-18) are not understood to determine a color direction based on localized color characteristics, et al.

Thus, Kawakami is not understood to teach or suggest the combination recited in claim 17. (The many other deficiencies of Kawakami need not be belabored at this time.).

Claim 19 is also believed to recite patentable combinations.

Favorable consideration is respectfully requested.

Kawakami in view of the Background

Claim 18

The cited passages of Kawakami in view of the Background are not understood to teach or suggest the combination recited in claim 18.

For example, claim 18 recites two distinct projections, and two distinct readings, all in the same combination.

The particular combination of features is not discussed in the cited reference.

We respectfully request that claim 18 be allowed.

Remaining Claims

The remaining claims are also believe to recite patentable combinations. Favorable consideration is respectfully requested.

Information Disclosure Statement

An Information Disclosure Statement (IDS) and Form-1449 are filed herewith. Favorable consideration is respectfully requested.

Conclusion

The application is believed to be in condition for allowance. An early notice of allowance is respectfully requested. Nevertheless, the Examiner is invited to telephone the undersigned at 503-469-4685 if any issue remains.

Respectfully submitted,

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